

# LIQUID BUBBLE SOLUTION FOR PRODUCING LUMINOUS BUBBLES

## BACKGROUND OF THE INVENTION

The present invention relates to a liquid bubble solution for  
5 producing light bubbles and, more particularly, to such a liquid  
bubble solution adapted to produce bubbles that provide  
illumination when viewed in the dark and under an external source  
of invisible ultraviolet or infrared radiation.

A known liquid bubble solution for producing black light  
10 bubbles is composed of 75%~90% surface active agent and  
10%~25% fluorescent agent, and adapted to provide illumination of  
the bubbles when viewed in the dark and under an external source  
of invisible ultraviolet or infrared radiation. This composition of  
liquid bubble solution has numerous drawbacks as outlined  
15 hereinafter:

1. High manufacturing cost because of high concentration of  
fluorescence agent.
2. Low bubble producing rate because of low surface tension due to  
high concentration of fluorescence agent.
- 20 3. Low luminous effect. Because of low surface tension,  
fluorescent light is evenly distributed in the bubbles, and the  
periphery of each bubble is less bright.
4. High contamination risk. Because a particular pigment

dispersion is added to the latex-like liquid bubble solution for producing a particular color of bubble, a color stain is left on the clothes, floor, or any object touching the liquid bubble solution.

### **SUMMARY OF THE INVENTION**

5           The present invention provides a liquid bubble solution, which eliminates the aforesaid drawbacks. The liquid bubble solution of the present invention achieves the following advantages:

- 10           1. Low manufacturing cost because of low concentration (1%~6%) of fluorescent brightening agent.
2. High bubble producing rate because low concentration of fluorescent brightening agent produces less effect to surface tension of bubbles.
3. High luminous effect. Because of high surface tension,  
15           fluorescent light is concentrated on the periphery of each produced bubble.
4. Low contamination risk. Because the liquid bubble solution is maintained transparent or semitransparent when added with a particular dye, contamination on the clothes, floor, or any object  
20           touching the bubbles is insignificant.
5. Wide range of working temperature. The liquid bubble solution contains 2% glycerin, which produces a wetting effect to help dispersion of surface active agent and dye

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A liquid bubble solution in accordance with the present invention comprises about 67%~89% water, 8%~25% surface active agent, 2% glycerin, and 1%~6% fluorescent brightening agent. The water used is well sterilized. The surface active agent used is same as that used in regular liquid bubble solutions, and mainly comprised of liquid soap. Glycerin produces wetting effect to help dispersion of surface active agent, and to prevent surface active agent from forming a gel, so as to widen the range of working temperature.

The aforesaid fluorescent brightening agent is a liquid of light brown color obtained from Diamino-Stilbene Disulphonic Acid Derivatives. The ions of the fluorescent brightening agent are anions. The fluorescent brightening agent has the following properties:

Specific gravity: 1.1~1.25 under 20°C

PH value: 7~9 under 20°C

Freezing point: 4°C approximately

Boiling point 103°C approximately

Further, the fluorescent brightening agent is highly stable and not reactive, neither inflammable nor explosive. When diluted with water, the fluorescent brightening agent is non-toxic, and not irritating to skin.

A liquid bubble solution made subject to the aforesaid composition has a transparent to semitransparent color that produces fluorescence light of blue to purple color when viewed in the dark and under an external source of invisible ultraviolet or infrared radiation. Because the bubbles have high surface tension, produced fluorescent light is concentrated on the periphery of the bubbles. Further, 0.2%~0.8% viscosity index improver may be added to the solution to increase its viscosity, so as to improve bubble formation rate.

In order to produce a particular color, a particular color dye may be added to the liquid bubble solution at the ratio of 5%~20% dye with 80%~95% liquid bubble solution. The dye used is a liquid pigment. The use of glycerin helps dispersion of particles of the dye in the liquid bubble solution. When mixed with the dye, the liquid bubble solution has the form of a transparent to semitransparent liquid that produces a particular color of fluorescent light when viewed in the dark and under an external source of invisible ultraviolet or infrared radiation. Further, because the liquid bubble solution is a transparent to semitransparent liquid, it leaves insignificant stain on the object, which touches the liquid bubble solution.

Although a particular embodiment of the invention has been described in detail for purposes of illustration, various

modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.